

## **REMARKS**

Applicants express their appreciation to Examiners Rosenau and Supervisory Examiner Budd for taking the time to interview this case with the undersigned on February 20, 2008. The instant Amendment is presented to reiterate applicants' argument for patentability presented during the Examiner Interview. Reconsideration of the rejection of claims 4, 5 and 9 under 35 USC §103(a) over US Patent No. 5,176,140 to Kami in view of US Patent No. 5,722,644 to Kinoshita, US Patent No. 4,281,550 to Erickson and US Patent No. 6,781,287 to Dam, is respectfully requested.

Applicants' ultrasonic probe is designed and intended for use with an endoscope, by operation in which the ultrasonic probe is inserted into the body cavity. The probe includes an ultrasonic transducer, which includes a backing member. The backing member is included to attenuate ultrasonic waves that are generated at a frequency of about 5MHz by a piezoelectric element comprising the ultrasonic transducer. The backing member was the focus of both the outstanding Office Action and the February 20 Examiner Interview.

The ultrasonic probe with transducer and backing member is immersed in an aqueous solution, and is in close contact with moistened body walls during examination. The transducer and backing member are generally repeatedly used and exposed or subjected to washing and sterilization by chemical agents and/or heat. The vibration-damping material comprising the backing member is subjected to these conditions. This presents an inherent problem for a backing member material during normal intended use and maintenance, which problem is not addressed by or obvious in view of the prior art.

The vibration-damping material must by its nature maintain a highly stable shape to prevent it from being deformed under the above-mentioned conditions. Over short or long-term

use, the backing member shape must be maintained with minimal deformity so that the characteristics of the ultrasonic waves generated and received by the ultrasonic transducer do not unacceptably vary by swelling or deforming due to the exposure to the moisture or aqueous solution during operation, or deform due to the exposure to heat or chemical fluids during cleaning and sterilization. If such swelling or deforming conditions occur, the intended operational performance of the ultrasonic probe as designed cannot be realized.

The inventors of the claimed ultrasonic probe had, after various attempts to prepare a water-resistive, chemical agent and/or heat resistive damping member concluded that a mixture comprising acrylonitrile-butadiene rubber (NBR), ethylene-propylene terpolymer (EPDM), and at least inorganic fine powders (recited by the language of new independent claim 9) was most suitable for operation under the stated conditions. The inventors found by experimental efforts that the backing member did not swell or deform when constructed to display the characteristics in the 4 critical ranges. The backing member as claimed must display 1) a hardness property of 80 –100 degrees in the A scale in conformity with JISK6253, 2) an ultrasonic absorbing coefficient of 10dB/mm or more at a frequency of 5 MHz, 3) a percentage of absorption that is 2.5% or less and 4) an acoustic impedance in a range of  $1 \times 10^6$  to  $8 \times 10^6$  kg/m<sup>2</sup>s.

In the November 29, 2007 Office Action, Examiner Rosenau asserts that the proposed 103 (a) combination discloses the backing member as claimed. Examiner Rosenau asserts that it would have been obvious to discover optimum or workable ranges by routine experimentation as long as the general conditions of the claim are shown, citing In re Aller, 105 USPQ 233 (CCPA 1955). Examiner Rosenau asserts that Kinoshita discloses the general conditions, and that it is not inventive to optimize the general conditions to realize a backing member that displays 1) a hardness property of 80 –100 degrees in the A scale in conformity with JISK6253, 2) an

ultrasonic absorbing coefficient of 10dB/mm or more at a frequency of 5 MHz, 3) a percentage of absorption that is 2.5% or less and 4) an acoustic impedance in a range of  $1 \times 10^6$  to  $8 \times 10^6$  kg/m<sup>2</sup>s. The Examiner concludes that the four ranges are obvious by routine experimentation based on the premise that the general conditions are shown by Kinoshita.

In Aller, the claimed process on appeal was found to be identical with a sulphuric acid-based process of the prior art except for being implemented in a higher temperature range. The Aller opinion states that where the general conditions of a claim are disclosed in the prior art (the Aller appellant's preferred temperature range), it is not inventive to discover such optimum or workable ranges by routine experimentation. Aller at 235.

As I asserted on February 20 during the Examiner interview, the general conditions of claim 9 are not found in Kinoshita so that the use of Kinoshita as the secondary reference under Section 103(a) is distinguishable from the facts of Aller. The general conditions relating to applicants' claimed critical ranges are not taught by Kinoshita. Accordingly, the asserted section 103(a) rejection including Kinoshita stands outside of the precedential control of Aller. Applicants' sole independent claim 9 includes the four separate distinct ranges the backing member must display, i.e., 1) a hardness property of 80 –100 degrees in the A scale in conformity with JISK6253, 2) an ultrasonic absorbing coefficient of 10dB/mm or more at a frequency of 5 MHz, 3) a percentage of absorption that is 2.5% or less and 4) an acoustic impedance in a range of  $1 \times 10^6$  to  $8 \times 10^6$  kg/m<sup>2</sup>s. Kinoshita does not disclose the benefit of a backing member displaying a particular hardness property, ultrasonic absorbing coefficient, % of absorption and acoustic impedance.

The only ranges or general conditions identified in Kinoshita, other than the broad listing of materials at col. 1, line 65-col. 2, line 21, is found in Kinoshita's at col. 2, lines 18-21. There,

Kinoshita states that the resulting compounded composition is not restricted as long as it satisfies the specific gravity range of 1.6-2.8, as well as adhesive strength range of 0.5-2.0 Kg/25 mm below. These ranges or features are not included in applicants' claim 9 (nor claims 4 and 5), and again, Kinoshita does not mention preparing a compound to display 1) a hardness property of 80–100 degrees in the A scale in conformity with JISK6253, 2) an ultrasonic absorbing coefficient of 10dB/mm or more at a frequency of 5 MHz, 3) a percentage of absorption that is 2.5% or less and 4) an acoustic impedance in a range of  $1 \times 10^6$  to  $8 \times 10^6$  kg/m<sup>2</sup>s, required by the invention as set forth in new claim 9.

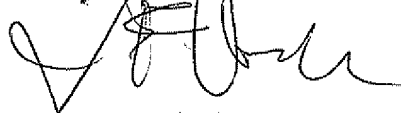
With all due respect, the Examiner over-applies Aller to the instant facts when he asserts that the general conditions at issue in Aller with respect to the 4 claimed ranges are met by Applicants' rejected claims. Kinoshita discloses only a list of compounds, several of which are constituent parts of the claimed backing member. Applicants do not agree that by merely identifying a list of constituent compounds, Kinoshita has disclosed the general conditions as articulated by Aller. Hence, under Aller, because the general conditions of the 4 claimed ranges are not found in Kinoshita, and it would not have been obvious for the skilled artisan to discover the optimum or critical ranges by routine experimentation, as claimed.

Kami combined with Kinoshita, Erickson and Dam do not teach or suggest a limitation that when immersed in an acoustic medium, the backing member displays 1) an absorption in a range of 2.5 % or less, 2) an acoustic impedance in a range of  $(1-8) \times 10^6$  kg/(m<sup>2</sup>s), 3) a percentage of absorption that is 2.5% or less, and 4) an acoustic impedance in a range of  $1 \times 10^6$  to  $8 \times 10^6$  kg/m<sup>2</sup>s. Claims 4 and 5 depend from independent and are patentable in view of Kami, Kinoshita, Erickson and Dam for at least the reasons stated for the patentability of independent claim 9 under section 103(a). Hence, applicants respectfully request the withdrawal of the

rejection of claims 4 and 5 under Section 103(a) in view of any combination of the four (4) references, and allowance of claims 4, 5 and 9.

If the Examiner believes that a telephone conference with applicants' attorneys would be advantageous to the disposition of this case, the Examiner is asked to telephone the undersigned.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'John F. Vodopia', written over the typed name.

John F. Vodopia  
Registration No.: 36,299  
Attorney for Applicants

SCULLY, SCOTT, MURPHY & PRESSER, P.C.  
400 Garden City Plaza-Suite 300  
Garden City, New York 11530  
(516) 742-4343

JFV:tb